

# Evaluating early-stage disk halo changes after small incision lenticule extraction

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## Abstract

**Purpose:** To investigate early changes in the disk halo under different light conditions after myopic small incision lenticule extraction (SMILE).

**Methods:** This prospective study included 70 eyes of 70 myopic patients aged 18-33 years, with a spherical equivalent (SE) of  $-5.87 \pm 1.86$  D, who underwent SMILE. The subjective refraction, higher-order aberrations (HOAs), pupillometry, and halo were measured preoperatively and postoperatively to analyse disk halo variations and correlated factors.

**Results:** At 5 cd/m<sup>2</sup> and 1 cd/m<sup>2</sup> luminance, the halo radius in the high myopia (HM) group reached a postoperative peak after 1 week ( $p = 0.000$  and  $0.019$ , respectively), and recovered to baseline after 3 months. In the low-to-moderate (LM) myopia group, the halo radius did not differ 1 week postoperatively compared to the preoperative level ( $p = 0.015$ ), but significantly improved after 3 months ( $p = 0.000$ ). The halo radius correlated with SE, uncorrected distance visual acuity (UDVA), ocular HOAs, coma, and the pupillary light reflex in the LM group at all time points, but there were no correlations in the HM group.

**Conclusions:** Halo symptoms occurred early after SMILE, but recovered within 3 months. The recovery process was slower in the HM group than in the LM group, and the halo radius correlated with SE, UDVA, ocular HOAs, coma, and the pupillary light reflex.

**Keywords:** SMILE; disk halo; higher-order aberrations; pupillometry.